

# SEQUENCE LISTING

<110> Allen, Steve  
Lee, Jian Ming

<120> Plant Protein Kinases

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<150> 60/092,438

<151> July 10, 1998

<160> 23

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Gly His Gln Thr Pro Gly Val Ala Trp Pro Ser Pro Tyr Pro Ser Gly
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Gly Ala Ser Pro Leu Pro Ala Gly Val Ser Pro Ser Pro Ala Arg Ser
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Thr Pro Arg Arg Phe Phe Lys Arg Pro Phe Pro Pro Pro Ser Pro Ala
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Lys His Ile Lys Ala Thr Leu Ala Lys Arg Leu Gly Gly Gly Lys Pro
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Lys Glu Gly Thr Ile Pro Glu Glu Gly Gly Val Gly Ala Gly Gly Gly
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Thr Phe Gly Phe Ser Lys Asn Phe Gly Ala Lys Tyr Glu Leu Gly Lys
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Ala	Lys	Met	Thr	Thr	Ala	Ile	Ser	Ile	Glu	Asp	Val	Arg	Arg	Glu	Val	210	215	220
Lys	Ile	Leu	Arg	Ala	Leu	Ser	Gly	His	Asn	Asn	Leu	Val	Lys	Phe	Tyr	225	230	235
Asp	Ala	Cys	Glu	Asp	Gly	Leu	Asn	Val	Tyr	Ile	Val	Met	Glu	Leu	Cys	245	250	255
Glu	Gly	Gly	Glu	Leu	Leu	Asp	Arg	Ile	Leu	Ala	Arg	Gly	Gly	Arg	Tyr	260	265	270
Thr	Glu	Glu	Asp	Ala	Lys	Ala	Ile	Val	Val	Gln	Ile	Leu	Ser	Val	Val	275	280	285
Ala	Phe	Cys	His	Leu	Gln	Gly	Val	Val	His	Arg	Asp	Leu	Lys	Pro	Glu	290	295	300
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Tyr	Ser	Met	Glu	Ala	Asp	Ile	Trp	Ser	Ile	Gly	Val	Ile	Thr	Tyr	Ile	355	360	365
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Phe	Arg	Ser	Val	Leu	Arg	Ala	Asp	Pro	Asn	Phe	Asp	Asp	Ser	Pro	Trp	385	390	395
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Trp	Leu	Arg	Asp	Glu	Gln	Arg	Gln	Ile	Pro	Leu	Asp	Ile	Leu	Ile	Phe	435	440	445
Arg	Leu	Ile	Lys	Gln	Tyr	Leu	Arg	Ala	Thr	Pro	Leu	Lys	Arg	Leu	Ala	450	455	460
Leu	Lys	Ala	Leu	Ser	Lys	Ala	Leu	Arg	Glu	Asp	Glu	Leu	Leu	Tyr	Leu	465	470	475
Lys	Leu	Gln	Phe	Lys	Leu	Leu	Glu	Pro	Arg	Asp	Gly	Phe	Val	Ser	Leu	485	490	495

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Trp	Ile	Arg	Lys	Ser	Asp	Gly	Lys	Leu	Asn	Phe	Leu	Gly	Phe	Thr	Lys
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Pro Pro Ser Pro Ala Lys His Ile Arg Ala Leu Leu Ala Arg Xaa His  
35 40 45

Gly Ser Val Lys Pro Asn Glu Ala Ser Ile Pro Glu Ala Ser Xaa Cys  
50 55 60

Glu Leu Gly Leu Asp Lys Ser Phe Gly Phe Ala Lys Gln Phe Ser Ala  
65 70 75 80

His Tyr Glu Leu Ser Asp Glu Xaa Gly Arg Gly His Phe Gly Tyr Thr  
85 90 95

Cys Ser Ala Lys Gly Lys Lys Gly Ala Phe Lys Gly Leu Asn Val Ala  
100 105 110

Val Lys Val Ile Pro Lys Ala Lys Met Thr Thr Ala Ile Ala Ile Glu  
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 Phe Ser Ser Lys Glu Glu Asn Ser Pro Leu Lys Val Ile Asp Phe Gly  
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Gly	Glu	Thr	Val	Ala	Ile	Lys	Lys	Val	Leu	Gln	Asp	Lys	Arg	Tyr	Lys	100	105	110	
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Lys	His	Tyr	Asn	Lys	Met	Asn	Gln	Arg	Met	Pro	Leu	Ile	Tyr	Ala	Lys	165	170	175	
Leu	Tyr	Met	Tyr	Gln	Ile	Cys	Arg	Ala	Leu	Ala	Tyr	Ile	His	Asn	Ser	180	185	190	
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Pro	Leu	Phe	Pro	Gly	Glu	Ser	Gly	Val	Asp	Gln	Leu	Val	Glu	Ile	Ile	275	280	285	

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 gggagatcca tccctgtgga gaggagggag ggaggaagga ggcgttggag gaggagaggt 120  
 tgaccgatag atccattgcg gagttgagtg ttgatgcaaa gctgattcgc catcgtttag 180  
 ctttttataa gagatgggtt cagtanggtt tgcgccgtct gggttaaaca acagcagtan 240  
 caccagcatg ggtgctgaga agttgcctga tcagatgcat gatctgaaga taaggacga 300  
 taaggaantt gaacgactat tattaacncc aanggaacag aaancggcca cataattgtc 360  
 acaactactg gnggcanaaa tggtcancgc aaacanacag ttagctacat ggctgancgt 420  
 attgtagggc aagggttcatt tgggattgtc ttccaagcaa aattctggag acaaggtag 480  
 acagttgcta tcaagaangt tctcangata aacgctacaa naaccgttag cctcaaacca 540  
 tgcgccttct tgacaaccaa atgttggttac tctgaagca tggt 584

<210> 12  
 <211> 105  
 <212> PRT  
 <213> Oryza sativa

<220>  
 <221> UNSURE  
 <222> (5)

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<220>  
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 <222> (69)

<220>  
 <221> UNSURE  
 <222> (76)

<220>  
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 <222> (103)

<400> 12  
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 Thr Ser Met Gly Ala Glu Lys Leu Pro Asp Gln Met His Asp Leu Lys  
                   20                  25                  30  
 Ile Arg Asp Asp Lys Glu Xaa Glu Xaa Xaa Thr Ile Ile Asn Xaa Xaa  
           35                  40                  45  
 Gly Thr Glu Xaa Gly His Ile Ile Val Thr Thr Thr Gly Gly Xaa Asn  
           50                  55                  60  
 Gly Xaa Pro Lys Xaa Thr Val Ser Tyr Met Ala Xaa Arg Ile Val Gly  
           65                  70                  75                  80  
 Gln Gly Ser Phe Gly Ile Val Phe Gln Ala Lys Phe Trp Arg Gln Gly  
                   85                  90                  95  
 Glu Thr Val Ala Ile Lys Xaa Val Leu  
           100                  105

<210> 13  
 <211> 1429  
 <212> DNA  
 <213> Glycine max

<220>  
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<220>  
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 <222> (1416)

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 aatgaatggg ttttgagcaa cagcagttaa aagagaaaag ggattcagcg aagatgacat 120  
 cgggttggtgt ggcaccaact tcgggtttga gagaagccag tgggcatgga gcagcaggtg 180  
 ttgatagatt gccagaggag atgaacgata tgaaaattag ggatgataga gaaatggaag 240  
 ccacagttgt tgatggcaac ggaacggaga caggacatat cattgtgact accattgggg 300  
 gtagaaatgg tcagcccaag cagactataa gctacatggc agagcgtggt gtagggcatg 360  
 gatcatttgg agttgtcttc caggctaagt gcttgaaaac cggtgaaaact gtggctatca 420  
 aaaaggttct tcaagacaag aggtacaaga accgggagct gcaaacaatg cgccttcttg 480  
 accacccaaa tgtcgttgct ttgaagcact gtttcttttc aaccactgaa aaggatgaac 540  
 tataccttaa tttggttctc gaatatgttc ctgaaacagt taatcgggtg ataaaacatt 600  
 acaacaagtt taaccaaagg atgccactga tatatgtgaa actctataca taccagatct 660  
 ttagggcggt atcttatatt catcgttgta ttggagtctg ccacgggat atcaagcctc 720  
 aaaatctatt ggtcaatcca cactcacc aggttaaatt atgtgacttt ggaagtgcaa 780  
 aggttttggg aaaaggcgaa ccaaatatat catacatatg ttctagatac tatagagcac 840  
 ctgagctcat atttgcgca actgaatata ctacagccat tgacgtctgg tctgttggat 900  
 gtgttttagc tgagctgctg cttggacagc ctctgttccc tggtgagagt ggagttgatc 960  
 aacttgttga gatcatcaag gttctgggca ctccaacaag ggaagagatt aagtgcata 1020  
 accctaatta tacagaattt aaattcccac agattaaagc acatccatgg cacaagatct 1080  
 tccataagcg catgcctcca gaggtgttg atttggtatc aagactacta caatactccc 1140  
 ctaacttgcg gtgcacagtt ttagatgcct tggacgcacc ctttcttttg gacgaattcc 1200  
 gngatccaaa tcctcgcttg ccaaatgggc cgatccntcc aacaactatt aattcaaacc 1260  
 catgaactga aagtgtccaa ctgagatttg gggaaantgg tcaaagcatg caaggaacaa 1320  
 tgccgtttct ggcttgtaan tgtacaaaac tgaagtgttg ttcatataga atgcgngctt 1380  
 cctcattaaa ggaattgtgg accttatgan tcgttncgt aacagtttag 1429

<210> 14  
 <211> 399  
 <212> PRT  
 <213> Glycine max

<220>

<221> UNSURE

<222> (391)

<400> 14

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Met Thr Ser Val Gly Val Ala Pro Thr Ser Gly Leu Arg Glu Ala Ser  
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Gly His Gly Ala Ala Gly Val Asp Arg Leu Pro Glu Glu Met Asn Asp  
35 40 45

Met Lys Ile Arg Asp Asp Arg Glu Met Glu Ala Thr Val Val Asp Gly  
50 55 60

Asn Gly Thr Glu Thr Gly His Ile Ile Val Thr Thr Ile Gly Gly Arg  
65 70 75 80

Asn Gly Gln Pro Lys Gln Thr Ile Ser Tyr Met Ala Glu Arg Val Val  
85 90 95

Gly His Gly Ser Phe Gly Val Val Phe Gln Ala Lys Cys Leu Glu Thr  
100 105 110

Gly Glu Thr Val Ala Ile Lys Lys Val Leu Gln Asp Lys Arg Tyr Lys  
115 120 125

Asn Arg Glu Leu Gln Thr Met Arg Leu Leu Asp His Pro Asn Val Val  
130 135 140

Ala Leu Lys His Cys Phe Phe Ser Thr Thr Glu Lys Asp Glu Leu Tyr  
145 150 155 160

Leu Asn Leu Val Leu Glu Tyr Val Pro Glu Thr Val Asn Arg Val Ile  
165 170 175

Lys His Tyr Asn Lys Phe Asn Gln Arg Met Pro Leu Ile Tyr Val Lys  
180 185 190

Leu Tyr Thr Tyr Gln Ile Phe Arg Ala Leu Ser Tyr Ile His Arg Cys  
195 200 205

Ile Gly Val Cys His Arg Asp Ile Lys Pro Gln Asn Leu Leu Val Asn  
210 215 220

Pro His Thr His Gln Val Lys Leu Cys Asp Phe Gly Ser Ala Lys Val  
225 230 235 240

Leu Val Lys Gly Glu Pro Asn Ile Ser Tyr Ile Cys Ser Arg Tyr Tyr  
245 250 255

Arg Ala Pro Glu Leu Ile Phe Gly Ala Thr Glu Tyr Thr Thr Ala Ile  
260 265 270

Asp Val Trp Ser Val Gly Cys Val Leu Ala Glu Leu Leu Leu Gly Gln  
275 280 285

Pro Leu Phe Pro Gly Glu Ser Gly Val Asp Gln Leu Val Glu Ile Ile  
 290 295 300

Lys Val Leu Gly Thr Pro Thr Arg Glu Glu Ile Lys Cys Met Asn Pro  
 305 310 315 320

Asn Tyr Thr Glu Phe Lys Phe Pro Gln Ile Lys Ala His Pro Trp His  
 325 330 335

Lys Ile Phe His Lys Arg Met Pro Pro Glu Ala Val Asp Leu Val Ser  
 340 345 350

Arg Leu Leu Gln Tyr Ser Pro Asn Leu Arg Cys Thr Val Leu Asp Ala  
 355 360 365

Leu Asp Ala Pro Phe Pro Leu Asp Glu Phe Arg Asp Pro Asn Pro Arg  
 370 375 380

Leu Pro Asn Gly Pro Ile Xaa Pro Thr Thr Ile Asn Ser Asn Pro  
 385 390 395

<210> 15  
 <211> 1673  
 <212> DNA  
 <213> Triticum aestivum

<220>  
 <221> unsure  
 <222> (1349)

<400> 15

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gcagcaggat	ggcgaggcgc	cgtatgcgga	ggggaacgac	gccatgaccg	gtcacatcat	180
ctccaccacc	atcggcgcca	agaacggcga	gcccgaagcag	acgattagct	acatggcgga	240
gcgcgttgtg	ggcactgggt	cgtttggcat	cgtctttcag	gctaaatgcc	tggaaccgg	300
ggagatgggtg	ggcattaaga	aggtactgca	ggacagacgg	tacaagaacc	gtgagctgca	360
gcttatgcgt	tcgatgatcc	attccaatgt	tgtctccctc	aagcactgct	tcttctcaac	420
cacaagtaga	gatgagctgt	tcctgaacct	tgatcatggag	tatgtcccgg	agacgctata	480
ccgcgtgctt	aagcactaca	gtaatgccaa	ccaggggatg	ccgcttatct	atgtcaagct	540
ttacatgtat	cagcttttta	gagggctagc	ttatgttcat	actgttccag	gagtttgcca	600
cagggatgtg	aaaccacaaa	atgttttggt	tgatcctcta	acccatcaag	tcaagatctg	660
tgactttgga	agtgcaaaag	ttctgggtacc	tggtgaacct	aacatagcat	acatatgctc	720
tcgctactat	cgtgctcctg	agctcatatt	tggtgcaact	gaatatacaa	cttcaataga	780
catatggtca	gctggatgtg	ttcttgcaga	gctacttctt	ggtcagcctc	tgtttccagg	840
agagactgcg	gttgatcagc	tagtggagat	tatcaagggt	cttggtactc	caaccctga	900
ggaaattcgg	tgcataaacc	ccaactatac	cgagttcagg	tttcctcaga	ttaaggctca	960
tccttggcac	aagattttcc	acaagagaat	gcccgcgtgaa	gctatagatc	ttgcctcccg	1020
ccttctccag	tattcaccaa	atctacgttg	caactgctctt	gatgcatgtg	cacattcctt	1080
ctttgatgag	ctacgtgagc	cgaatgcaacg	cttgccgaat	ggccgcccac	tcctcctctt	1140
gttcaacttc	aaacctgaac	tagcgaacgc	ctctccagag	ctcatcaaca	ggcttgttcc	1200
ggaacatggt	cgacggcaaa	atggcccca	cttcgcccac	gctgggagct	aaacggggcg	1260
cgcccgcatc	gcccataatt	ttgtttgtcc	gccatcatcg	aagaatcaat	ctctccccta	1320
aatcctgagg	agagaccgat	caagtgcant	gccagtgcc	gtgaaagaag	tacaactatg	1380
taaattacct	gaccttgga	gaatcgttgt	tggtgttgcc	ggtgccggcc	atgtttaagt	1440
acatggcggc	acatgttggt	tgagttgtta	cttattatta	agtaggtaag	agcaatgatg	1500
taggaggtgg	agacatatgt	taatgctagg	tctgtgacct	gttttaagta	catttttcta	1560
atgcttggtg	gtgggtactgt	aatgcggcaa	tagctgctcc	atgttttctc	ccttgcctcc	1620
gatgtaaatg	tcgtcgtcct	gcagcaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaa	1673

<210> 16  
 <211> 402  
 <212> PRT  
 <213> Triticum aestivum

<400> 16

Met Glu His Pro Ala Pro Ala Pro Glu Pro Met Leu Leu Asp Glu Gln  
 1 5 10 15

Pro Pro Thr Ala Val Ala Cys Glu Lys Lys Gln Gln Asp Gly Glu Ala  
 20 25 30

Pro Tyr Ala Glu Gly Asn Asp Ala Met Thr Gly His Ile Ile Ser Thr  
 35 40 45

Thr Ile Gly Gly Lys Asn Gly Glu Pro Lys Gln Thr Ile Ser Tyr Met  
 50 55 60

Ala Glu Arg Val Val Gly Thr Gly Ser Phe Gly Ile Val Phe Gln Ala  
 65 70 75 80

Lys Cys Leu Glu Thr Gly Glu Met Val Gly Ile Lys Lys Val Leu Gln  
 85 90 95

Asp Arg Arg Tyr Lys Asn Arg Glu Leu Gln Leu Met Arg Ser Met Ile  
 100 105 110

His Ser Asn Val Val Ser Leu Lys His Cys Phe Phe Ser Thr Thr Ser  
 115 120 125

Arg Asp Glu Leu Phe Leu Asn Leu Val Met Glu Tyr Val Pro Glu Thr  
 130 135 140

Leu Tyr Arg Val Leu Lys His Tyr Ser Asn Ala Asn Gln Gly Met Pro  
 145 150 155 160

Leu Ile Tyr Val Lys Leu Tyr Met Tyr Gln Leu Phe Arg Gly Leu Ala  
 165 170 175

Tyr Val His Thr Val Pro Gly Val Cys His Arg Asp Val Lys Pro Gln  
 180 185 190

Asn Val Leu Val Asp Pro Leu Thr His Gln Val Lys Ile Cys Asp Phe  
 195 200 205

Gly Ser Ala Lys Val Leu Val Pro Gly Glu Pro Asn Ile Ala Tyr Ile  
 210 215 220

Cys Ser Arg Tyr Tyr Arg Ala Pro Glu Leu Ile Phe Gly Ala Thr Glu  
 225 230 235 240

Tyr Thr Thr Ser Ile Asp Ile Trp Ser Ala Gly Cys Val Leu Ala Glu  
 245 250 255

Leu Leu Leu Gly Gln Pro Leu Phe Pro Gly Glu Thr Ala Val Asp Gln  
 260 265 270

Leu Val Glu Ile Ile Lys Val Leu Gly Thr Pro Thr Arg Glu Glu Ile  
 275 280 285

Arg Cys Met Asn Pro Asn Tyr Thr Glu Phe Arg Phe Pro Gln Ile Lys  
 290 295 300  
 Ala His Pro Trp His Lys Ile Phe His Lys Arg Met Pro Ala Glu Ala  
 305 310 315 320  
 Ile Asp Leu Ala Ser Arg Leu Leu Gln Tyr Ser Pro Asn Leu Arg Cys  
 325 330 335  
 Thr Ala Leu Asp Ala Cys Ala His Ser Phe Phe Asp Glu Leu Arg Glu  
 340 345 350  
 Pro Asn Ala Arg Leu Pro Asn Gly Arg Pro Phe Pro Pro Leu Phe Asn  
 355 360 365  
 Phe Lys Pro Glu Leu Ala Asn Ala Ser Pro Glu Leu Ile Asn Arg Leu  
 370 375 380  
 Val Pro Glu His Val Arg Arg Gln Asn Gly Pro Asn Phe Ala His Ala  
 385 390 395 400

Gly Ser

<210> 17  
 <211> 639  
 <212> PRT  
 <213> Zea mays

<400> 17  
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 1 5 10 15  
 Gln Ser Val Ser Thr Ala Leu Trp Lys Thr Pro Gln Glu Gly Asp Ala  
 20 25 30  
 Leu Pro Ala Ala Ala Asn Gly Pro Gly Gly Pro Ala Gly Ala Gly Ser  
 35 40 45  
 Gln Ser Ala Leu Pro Lys Pro Ala Ser Asp Val His His Val Ala Val  
 50 55 60  
 Gln Ser Glu Ala Pro Glu Pro Val Lys Ile Ala Ala Tyr His Ser Glu  
 65 70 75 80  
 Pro Ala Pro Ala Val Arg Ser Glu Ala Pro Glu Pro Val Lys Ile Ala  
 85 90 95  
 Ala Ser His Ser Glu Pro Ala Pro Met Ala Ala Lys Pro Gly Gly Ala  
 100 105 110  
 Ala Ala Asn Ala Ser Pro Ser Pro Ser Pro Arg Pro Arg Pro Gln Val  
 115 120 125  
 Lys Arg Val Ser Ser Ala Gly Leu Leu Leu Gly Ser Val Leu Arg Arg  
 130 135 140  
 Lys Thr Glu Asn Leu Lys Asp Lys Tyr Ser Leu Gly Arg Arg Leu Gly  
 145 150 155 160

Gln Gly Gln Phe Gly Thr Thr His Leu Cys Val Glu Arg Ala Thr Gly  
 165 170 175  
 Lys Glu Leu Ala Cys Lys Ser Ile Leu Lys Arg Lys Leu Gly Ser Asp  
 180 185 190  
 Asp Asp Val Glu Asp Val Arg Arg Glu Ile Gln Ile Met His His Leu  
 195 200 205  
 Ala Gly His Pro Ser Val Val Gly Ile Arg Gly Ala Tyr Glu Asp Ala  
 210 215 220  
 Val Ala Val His Leu Val Met Glu Leu Cys Gly Gly Gly Glu Leu Phe  
 225 230 235 240  
 Asp Arg Ile Val Arg Arg Gly His Tyr Thr Glu Arg Lys Ala Ala Glu  
 245 250 255  
 Leu Ala Arg Val Ile Val Gly Val Val Glu Ala Cys His Ser Met Gly  
 260 265 270  
 Val Met His Arg Asp Leu Lys Pro Glu Asn Phe Leu Phe Ala Asp His  
 275 280 285  
 Ser Glu Glu Ala Ala Leu Lys Thr Ile Asp Phe Gly Leu Ser Ile Phe  
 290 295 300  
 Phe Arg Pro Gly Gln Ile Phe Thr Asp Val Val Gly Ser Pro Tyr Tyr  
 305 310 315 320  
 Val Ala Pro Glu Val Leu Lys Lys Arg Tyr Gly Pro Glu Ala Asp Val  
 325 330 335  
 Trp Ser Ala Gly Val Ile Ile Tyr Ile Leu Leu Cys Gly Val Pro Pro  
 340 345 350  
 Phe Trp Ala Glu Asn Glu Gln Gly Ile Phe Glu Glu Val Leu His Gly  
 355 360 365  
 Arg Leu Asp Phe Glu Ser Glu Pro Trp Pro Ser Ile Ser Asp Gly Ala  
 370 375 380  
 Lys Asp Leu Val Arg Arg Met Leu Val Arg Asp Pro Arg Lys Arg Leu  
 385 390 395 400  
 Thr Ala His Glu Val Leu Arg His Pro Trp Val Gln Val Gly Gly Val  
 405 410 415  
 Ala Pro Asp Arg Pro Leu Asp Ser Ala Val Leu Ser Arg Met Lys Gln  
 420 425 430  
 Phe Ser Ala Met Asn Lys Leu Lys Lys Met Ala Leu Arg Val Ile Ala  
 435 440 445  
 Glu Asn Leu Ser Glu Asp Glu Ile Ala Gly Leu Arg Glu Met Phe Lys  
 450 455 460  
 Met Ile Asp Ala Asp Asn Ser Gly Gln Ile Thr Phe Glu Glu Leu Lys  
 465 470 475 480

Val Gly Leu Glu Lys Val Gly Ala Asn Leu Gln Glu Ser Glu Ile Tyr  
485 490 495

Ala Leu Met Gln Ala Ala Asp Val Asp Asn Asn Gly Thr Ile Asp Tyr  
500 505 510

Gly Glu Phe Ile Ala Ala Thr Leu His Leu Asn Lys Val Glu Arg Glu  
515 520 525

Asp His Leu Phe Ala Ala Phe Gln Tyr Phe Asp Lys Asp Gly Ser Gly  
530 535 540

Tyr Ile Thr Ala Asp Glu Leu Gln Val Ala Cys Glu Glu Phe Gly Leu  
545 550 555 560

Gly Asp Val Gln Leu Glu Asp Leu Ile Gly Glu Val Asp Gln Asp Asn  
565 570 575

Asp Gly Arg Ile Asp Tyr Asn Glu Phe Val Ala Met Met Gln Lys Pro  
580 585 590

Thr Val Gly Gly Ser Arg Arg Arg Pro Ile Cys Arg Thr Ala Ser Ala  
595 600 605

Ser Gly Ser Ala Ser Gly Ser Gly Arg Arg Ser Gly Trp Pro Arg Pro  
610 615 620

Leu Cys Leu Trp Leu Pro Cys Cys Leu Arg Val Gly Val Asp Asp  
625 630 635

<210> 18  
<211> 625  
<212> PRT  
<213> Zea mays

<400> 18  
Met Gly Gln Cys Tyr Gly Lys Ala Arg Gly Ala Ser Ser Arg Ala Asp  
1 5 10 15

His Asp Ala Asp Pro Ser Gly Ala Gly Ser Val Ala Pro Pro Ser Pro  
20 25 30

Leu Pro Ala Asn Gly Ala Pro Leu Pro Ala Thr Pro Arg Arg His Lys  
35 40 45

Ser Gly Ser Thr Thr Pro Val His His His Gln Ala Ala Thr Pro Gly  
50 55 60

Ala Ala Ala Trp Pro Ser Pro Tyr Pro Ala Gly Gly Ala Ser Pro Leu  
65 70 75 80

Pro Ala Gly Val Ser Pro Ser Pro Ala Arg Ser Thr Pro Arg Arg Phe  
85 90 95

Phe Lys Arg Pro Phe Pro Pro Pro Ser Pro Ala Lys His Ile Lys Ala  
100 105 110

Thr Leu Ala Lys Arg Leu Gly Gly Gly Lys Pro Lys Glu Gly Thr Ile  
115 120 125



Ile Phe Arg Leu Val Lys Gln Tyr Leu Arg Ala Thr Pro Leu Lys Arg  
 450 455 460  
 Leu Ala Leu Lys Ala Leu Ser Lys Ala Leu Ser Glu Asp Glu Leu Leu  
 465 470 475 480  
 Tyr Leu Arg Leu Gln Phe Lys Leu Leu Glu Pro Arg Asp Gly Phe Val  
 485 490 495  
 Ser Leu Asp Asn Phe Arg Thr Ala Leu Thr Arg Tyr Ser Thr Asp Ala  
 500 505 510  
 Met Arg Glu Ser Arg Val Leu Glu Phe Gln His Ala Leu Glu Pro Leu  
 515 520 525  
 Ala Tyr Arg Lys Met Asp Phe Glu Glu Phe Cys Ala Ala Ala Ile Ser  
 530 535 540  
 Pro Tyr Gln Leu Glu Ala Leu Glu Arg Trp Glu Glu Ile Ala Gly Thr  
 545 550 555 560  
 Ala Phe Gln His Phe Glu Gln Glu Gly Asn Arg Val Ile Ser Val Glu  
 565 570 575  
 Glu Leu Ala Gln Glu Leu Asn Leu Ala Pro Thr His Tyr Ser Ile Val  
 580 585 590  
 Gln Asp Trp Ile Arg Lys Ser Asp Gly Lys Leu Asn Phe Leu Gly Phe  
 595 600 605  
 Thr Lys Phe Leu His Gly Val Thr Ile Arg Gly Ser Asn Thr Arg Arg  
 610 615 620  
 His  
 625  
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 <211> 576  
 <212> PRT  
 <213> Arabidopsis thaliana  
 <400> 19  
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 Pro Val Ser Gly Glu Thr Asn Glu Ala Pro Thr Asn Ser Gln Pro Pro  
 20 25 30  
 Ala Lys Ser Ser Gly Phe Pro Phe Tyr Ser Pro Ser Pro Val Pro Ser  
 35 40 45  
 Leu Phe Lys Ser Ser Pro Ser Val Ser Ser Ser Val Ser Ser Thr Pro  
 50 55 60  
 Leu Arg Ile Phe Lys Arg Pro Phe Pro Pro Pro Ser Pro Ala Lys His  
 65 70 75 80  
 Ile Arg Ala Phe Leu Ala Arg Arg Tyr Gly Ser Val Lys Pro Asn Glu  
 85 90 95

Val Ser Ile Pro Glu Gly Lys Glu Cys Glu Ile Gly Leu Asp Lys Ser  
 100 105 110  
 Phe Gly Phe Ser Lys Gln Phe Ala Ser His Tyr Glu Ile Asp Gly Glu  
 115 120 125  
 Val Gly Arg Gly His Phe Gly Tyr Thr Cys Ser Ala Lys Gly Lys Lys  
 130 135 140  
 Gly Ser Leu Lys Gly Gln Glu Val Ala Val Lys Val Ile Pro Lys Ser  
 145 150 155 160  
 Lys Met Thr Thr Ala Ile Ala Ile Glu Asp Val Ser Arg Glu Val Lys  
 165 170 175  
 Met Leu Arg Ala Leu Thr Gly His Lys Asn Leu Val Gln Phe Tyr Asp  
 180 185 190  
 Ala Phe Glu Asp Asp Glu Asn Val Tyr Ile Val Met Glu Leu Cys Lys  
 195 200 205  
 Gly Gly Glu Leu Leu Asp Lys Ile Leu Gln Arg Gly Gly Lys Tyr Ser  
 210 215 220  
 Glu Asp Asp Ala Lys Lys Val Met Val Gln Ile Leu Ser Val Val Ala  
 225 230 235 240  
 Tyr Cys His Leu Gln Gly Val Val His Arg Asp Leu Lys Pro Glu Asn  
 245 250 255  
 Phe Leu Phe Ser Thr Lys Asp Glu Thr Ser Pro Leu Lys Ala Ile Asp  
 260 265 270  
 Phe Gly Leu Ser Asp Tyr Val Lys Pro Asp Glu Arg Leu Asn Asp Ile  
 275 280 285  
 Val Gly Ser Ala Tyr Tyr Val Ala Pro Glu Val Leu His Arg Thr Tyr  
 290 295 300  
 Gly Thr Glu Ala Asp Met Trp Ser Ile Gly Val Ile Ala Tyr Ile Leu  
 305 310 315 320  
 Leu Cys Gly Ser Arg Pro Phe Trp Ala Arg Thr Glu Ser Gly Ile Phe  
 325 330 335  
 Arg Ala Val Leu Lys Ala Glu Pro Asn Phe Glu Glu Ala Pro Trp Pro  
 340 345 350  
 Ser Leu Ser Pro Glu Ala Val Asp Phe Val Lys Arg Leu Leu Asn Lys  
 355 360 365  
 Asp Tyr Arg Lys Arg Leu Thr Ala Ala Gln Ala Leu Cys His Pro Trp  
 370 375 380  
 Leu Val Gly Ser His Glu Leu Lys Ile Pro Ser Asp Met Ile Ile Tyr  
 385 390 395 400  
 Lys Leu Val Lys Val Tyr Ile Met Ser Thr Ser Leu Arg Lys Ser Ala  
 405 410 415

Leu Ala Ala Leu Ala Lys Thr Leu Thr Val Pro Gln Leu Ala Tyr Leu  
 420 425 430  
 Arg Glu Gln Phe Thr Leu Leu Gly Pro Ser Lys Asn Gly Tyr Ile Ser  
 435 440 445  
 Met Gln Asn Tyr Lys Thr Ala Ile Leu Lys Ser Ser Thr Asp Ala Met  
 450 455 460  
 Lys Asp Ser Arg Val Phe Asp Phe Val His Met Ile Ser Cys Leu Gln  
 465 470 475 480  
 Tyr Lys Lys Leu Asp Phe Glu Glu Phe Cys Ala Ser Ala Leu Ser Val  
 485 490 495  
 Tyr Gln Leu Glu Ala Met Glu Thr Trp Glu Gln His Ala Arg Arg Ala  
 500 505 510  
 Tyr Glu Leu Phe Glu Lys Asp Gly Asn Arg Pro Ile Met Ile Glu Glu  
 515 520 525  
 Leu Ala Ser Glu Leu Gly Leu Gly Pro Ser Val Pro Val His Val Val  
 530 535 540  
 Leu Gln Asp Trp Ile Arg His Ser Asp Gly Lys Leu Ser Phe Leu Gly  
 545 550 555 560  
 Phe Val Arg Leu Leu His Gly Val Ser Ser Arg Thr Leu Gln Lys Ala  
 565 570 575  
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 <212> PRT  
 <213> Arabidopsis thaliana  
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 Gly Val Asp Lys Leu Pro Glu Glu Met Asn Asp Met Lys Ile Arg Asp  
 20 25 30  
 Asp Lys Glu Met Glu Ala Thr Val Val Asp Gly Asn Gly Thr Glu Thr  
 35 40 45  
 Gly His Ile Ile Val Thr Thr Ile Gly Gly Arg Asn Gly Gln Pro Lys  
 50 55 60  
 Gln Thr Ile Ser Tyr Met Ala Glu Arg Val Val Gly His Gly Ser Phe  
 65 70 75 80  
 Gly Val Val Phe Gln Ala Lys Cys Leu Glu Thr Gly Glu Thr Val Ala  
 85 90 95  
 Ile Lys Lys Val Leu Gln Asp Arg Arg Tyr Lys Asn Arg Glu Leu Gln  
 100 105 110  
 Thr Met Arg Leu Leu Asp His Pro Asn Val Val Ser Leu Lys His Cys  
 115 120 125

Phe Phe Ser Thr Thr Glu Lys Asp Glu Leu Tyr Leu Asn Leu Val Leu  
130 135 140  
Glu Tyr Val Pro Glu Thr Val His Arg Val Ile Lys His Tyr Asn Lys  
145 150 155 160  
Leu Asn Gln Arg Met Pro Leu Ile Tyr Val Lys Leu Tyr Thr Tyr Gln  
165 170 175  
Ile Phe Arg Ala Leu Ser Tyr Ile His Arg Cys Ile Gly Val Cys His  
180 185 190  
Arg Asp Ile Lys Pro Gln Asn Leu Leu Val Asn Pro His Thr His Gln  
195 200 205  
Val Lys Leu Cys Asp Phe Gly Ser Ala Lys Val Leu Val Lys Gly Glu  
210 215 220  
Pro Asn Ile Ser Tyr Ile Cys Ser Arg Tyr Tyr Arg Ala Pro Glu Leu  
225 230 235 240  
Ile Phe Gly Ala Thr Glu Tyr Thr Thr Ala Ile Asp Val Trp Ser Ala  
245 250 255  
Gly Cys Val Leu Ala Glu Leu Leu Leu Gly Gln Pro Leu Phe Pro Gly  
260 265 270  
Glu Ser Gly Val Asp Gln Leu Val His Ile Ile Lys Val Leu Gly Thr  
275 280 285  
Pro Thr Arg Glu Glu Ile Lys Cys Met Asn Pro Asn Tyr Thr Glu Phe  
290 295 300  
Lys Phe Pro Gln Ile Lys Ala His Pro Trp His Lys Ile Phe His Lys  
305 310 315 320  
Arg Met Pro Pro Glu Ala Val Asp Leu Val Ser Arg Leu Leu Gln Tyr  
325 330 335  
Ser Pro Asn Leu Arg Ser Ala Ala Leu Asp Thr Leu Val His Pro Phe  
340 345 350  
Phe Asp Glu Leu Arg Asp Pro Asn Ala Arg Leu Pro Asn Gly Arg Phe  
355 360 365  
Leu Pro Pro Ala Phe His Phe Lys Pro His Glu Leu Lys Gly Val Pro  
370 375 380  
Leu Glu Met Val Ala Lys Leu Val Pro Glu His Ala Arg Lys Gln Cys  
385 390 395 400  
Pro Trp Leu Gly Leu  
405

<210> 21  
<211> 412  
<212> PRT  
<213> Medicago sativa

<400> 21  
 Met Met Ala Ser Gly Gly Val Ala Pro Ala Ser Gly Phe Ile Asp Lys  
 1 5 10 15  
 Asn Ala Ser Ser Val Gly Val Glu Lys Leu Pro Glu Glu Met Asn Asp  
 20 25 30  
 Met Lys Ile Arg Asp Asp Lys Glu Met Glu Ala Ala Thr Ile Val Asp  
 35 40 45  
 Gly Asn Gly Thr Glu Thr Gly His Ile Ile Val Thr Thr Ile Gly Gly  
 50 55 60  
 Lys Asn Gly Gln Pro Lys Gln Thr Ile Ser Tyr Met Ala Glu Arg Val  
 65 70 75 80  
 Val Gly His Gly Ser Phe Gly Val Val Phe Gln Ala Lys Cys Leu Glu  
 85 90 95  
 Thr Gly Glu Thr Val Ala Ile Lys Lys Val Leu Gln Asp Lys Arg Tyr  
 100 105 110  
 Lys Asn Arg Glu Leu Gln Thr Met Arg Leu Leu Asp His Pro Asn Val  
 115 120 125  
 Val Ser Leu Lys His Cys Phe Phe Ser Thr Thr Glu Lys Asp Glu Leu  
 130 135 140  
 Tyr Leu Asn Leu Val Leu Glu Tyr Val Pro Glu Thr Val Ser Arg Val  
 145 150 155 160  
 Ile Arg His Tyr Asn Lys Met Asn Gln Arg Met Pro Met Ile Tyr Val  
 165 170 175  
 Lys Leu Tyr Ser Tyr Gln Ile Cys Arg Ala Leu Ala Tyr Ile His Asn  
 180 185 190  
 Ser Ile Gly Val Cys His Arg Asp Ile Lys Pro Gln Asn Leu Leu Val  
 195 200 205  
 Asn Pro His Thr His Gln Leu Lys Ile Cys Asp Phe Gly Ser Ala Lys  
 210 215 220  
 Val Leu Val Lys Gly Glu Pro Asn Ile Ser Tyr Ile Cys Ser Arg Tyr  
 225 230 235 240  
 Tyr Arg Ala Pro Glu Leu Ile Phe Gly Ala Thr Glu Tyr Thr Thr Ala  
 245 250 255  
 Ile Asp Ile Trp Ser Ala Gly Cys Val Leu Gly Glu Leu Leu Leu Gly  
 260 265 270  
 Gln Pro Leu Phe Pro Gly Glu Ser Gly Val Asp Gln Leu Val Glu Ile  
 275 280 285  
 Ile Lys Val Leu Gly Thr Pro Thr Arg Glu Glu Ile Lys Cys Met Asn  
 290 295 300  
 Pro Asn Tyr Thr Glu Phe Lys Phe Pro Gln Ile Lys Ala His Pro Trp  
 305 310 315 320

His Lys Ile Phe His Lys Arg Met Pro Pro Glu Ala Val Asp Leu Val  
 325 330 335

Ser Arg Leu Leu Gln Tyr Ser Pro Asn Leu Arg Ser Thr Ala Leu Glu  
 340 345 350

Ala Leu Val His Pro Phe Tyr Asp Asp Val Arg Asp Pro Asn Thr Arg  
 355 360 365

Leu Pro Asn Gly Arg Phe Leu Pro Pro Leu Phe Asn Phe Lys Val Asn  
 370 375 380

Glu Leu Lys Gly Val Pro Ala Glu Met Leu Val Lys Leu Val Pro Pro  
 385 390 395 400

His Ala Arg Lys Gln Cys Ala Leu Phe Gly Ser Ser  
 405 410

<210> 22

<211> 411

<212> PRT

<213> Medicago sativa

<400> 22

Met Ala Ser Val Gly Val Ala Pro Thr Ser Gly Phe Arg Glu Val Leu  
 1 5 10 15

Gly Asp Gly Glu Ile Gly Val Asp Asp Ile Leu Pro Glu Glu Met Ser  
 20 25 30

Asp Met Lys Ile Arg Asp Asp Arg Glu Met Glu Ala Thr Val Val Asp  
 35 40 45

Gly Asn Gly Thr Glu Thr Gly His Ile Ile Val Thr Thr Ile Gly Gly  
 50 55 60

Arg Asn Gly Gln Pro Lys Gln Thr Ile Ser Tyr Met Ala Glu Arg Val  
 65 70 75 80

Val Gly His Gly Ser Phe Gly Val Val Phe Gln Ala Lys Cys Leu Glu  
 85 90 95

Thr Gly Glu Thr Val Ala Ile Lys Lys Val Leu Gln Asp Lys Arg Tyr  
 100 105 110

Lys Asn Arg Glu Leu Gln Thr Met Arg Leu Leu Asp His Pro Asn Val  
 115 120 125

Val Ser Leu Lys His Cys Phe Phe Ser Thr Thr Glu Lys Asp Glu Leu  
 130 135 140

Tyr Leu Asn Leu Val Leu Glu Tyr Val Pro Glu Thr Val His Arg Val  
 145 150 155 160

Ile Lys His Tyr Ser Lys Leu Asn Gln Arg Met Pro Met Ile Tyr Val  
 165 170 175

Lys Leu Tyr Thr Tyr Gln Ile Phe Arg Ala Leu Ser Tyr Ile His Arg  
 180 185 190

Cys Ile Gly Val Cys His Arg Asp Ile Lys Pro Gln Asn Leu Leu Val  
 195 200 205  
 Asn Pro His Thr His Gln Val Lys Leu Cys Asp Phe Gly Ser Ala Lys  
 210 215 220  
 Val Leu Val Lys Gly Glu Pro Asn Ile Ser Tyr Ile Cys Ser Arg Tyr  
 225 230 235 240  
 Tyr Arg Ala Pro Glu Leu Ile Phe Gly Ala Thr Glu Tyr Thr Thr Ala  
 245 250 255  
 Ile Asp Val Trp Ser Val Gly Cys Val Leu Ala Glu Leu Leu Leu Gly  
 260 265 270  
 Gln Pro Leu Phe Pro Gly Glu Arg Gly Val Asp Gln Leu Val Glu Ile  
 275 280 285  
 Ile Lys Val Leu Gly Thr Pro Thr Arg Glu Glu Ile Lys Cys Met Asn  
 290 295 300  
 Pro Asn Tyr Thr Glu Phe Lys Phe Pro Gln Ile Lys Ala His Pro Trp  
 305 310 315 320  
 His Lys Ile Phe His Lys Arg Met Pro Ala Glu Ala Val Asp Leu Val  
 325 330 335  
 Ser Arg Leu Leu Gln Tyr Ser Pro Asn Leu Arg Cys Gln Ala Leu Asp  
 340 345 350  
 Cys Leu Thr His Pro Phe Phe Asp Glu Leu Arg Asp Pro Asn Ala Arg  
 355 360 365  
 Leu Pro Thr Gly Arg Phe Leu Pro Pro Leu Phe Asn Phe Lys Pro His  
 370 375 380  
 Glu Leu Lys Gly Val Pro Val Glu Thr Leu Met Lys Leu Val Pro Glu  
 385 390 395 400  
 His Ala Arg Lys Gln Cys Pro Phe Leu Gly Leu  
 405 410

<210> 23  
 <211> 407  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 23  
 Met Ala Ser Leu Pro Leu Gly Pro Gln Pro His Ala Leu Ala Pro Pro  
 1 5 10 15  
 Leu Gln Leu His Asp Gly Asp Ala Leu Lys Arg Arg Pro Glu Leu Asp  
 20 25 30  
 Ser Asp Lys Glu Met Ser Ala Ala Val Ile Glu Gly Asn Asp Ala Val  
 35 40 45  
 Thr Gly His Ile Ile Ser Thr Thr Ile Gly Gly Lys Asn Gly Glu Pro  
 50 55 60

Lys Gln Thr Ile Ser Tyr Met Ala Glu Arg Val Val Gly Thr Gly Ser  
 65 70 75 80  
 Phe Gly Ile Val Phe Gln Ala Lys Cys Leu Glu Thr Gly Glu Ser Val  
 85 90 95  
 Ala Ile Lys Lys Val Leu Gln Asp Arg Arg Tyr Lys Asn Arg Glu Leu  
 100 105 110  
 Gln Leu Met Arg Pro Met Asp His Pro Asn Val Ile Ser Leu Lys His  
 115 120 125  
 Cys Phe Phe Ser Thr Thr Ser Arg Asp Glu Leu Phe Leu Asn Leu Val  
 130 135 140  
 Met Glu Tyr Val Pro Glu Thr Leu Tyr Arg Val Leu Arg His Tyr Thr  
 145 150 155 160  
 Ser Ser Asn Gln Arg Met Pro Ile Phe Tyr Val Lys Leu Tyr Thr Tyr  
 165 170 175  
 Gln Ile Phe Arg Gly Leu Ala Tyr Ile His Thr Val Pro Gly Val Cys  
 180 185 190  
 His Arg Asp Val Lys Pro Gln Asn Leu Leu Val Asp Pro Leu Thr His  
 195 200 205  
 Gln Val Lys Leu Cys Asp Phe Gly Ser Ala Lys Val Leu Val Lys Gly  
 210 215 220  
 Glu Pro Asn Ile Ser Tyr Ile Cys Ser Arg Tyr Tyr Arg Ala Pro Glu  
 225 230 235 240  
 Leu Ile Phe Gly Ala Thr Glu Tyr Thr Ala Ser Ile Asp Ile Trp Ser  
 245 250 255  
 Ala Gly Cys Val Leu Ala Glu Leu Leu Leu Gly Gln Pro Leu Phe Pro  
 260 265 270  
 Gly Glu Asn Ser Val Asp Gln Leu Val Glu Ile Ile Lys Val Leu Gly  
 275 280 285  
 Thr Pro Thr Arg Glu Glu Ile Arg Cys Met Asn Pro Asn Tyr Thr Asp  
 290 295 300  
 Phe Arg Phe Pro Gln Ile Lys Ala His Pro Trp His Lys Val Phe His  
 305 310 315 320  
 Lys Arg Met Pro Pro Glu Ala Ile Asp Leu Ala Ser Arg Leu Leu Gln  
 325 330 335  
 Tyr Ser Pro Ser Leu Arg Cys Thr Ala Leu Glu Ala Cys Ala His Pro  
 340 345 350  
 Phe Phe Asn Glu Leu Arg Glu Pro Asn Ala Arg Leu Pro Asn Gly Arg  
 355 360 365  
 Pro Leu Pro Pro Leu Phe Asn Phe Lys Gln Glu Leu Gly Gly Ala Ser  
 370 375 380

Met Glu Leu Ile Asn Arg Leu Ile Pro Glu His Val Arg Arg Gln Met  
385 390 395 400

Ser Thr Gly Leu Gln Asn Ser  
405

Met Glu Leu Ile Asn Arg Leu Ile Pro Glu His Val Arg Arg Gln Met  
385 390 395 400